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LCD AND ACTIVE WEB ICON DOWNLOAD

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BACKGROUND OF THE INVENTION

1. Field Of The Invention

This invention relates generally to a computer system and, more specifically, to a user configurable keyboard comprising a plurality of icons for launching computer applications and URLs.

2. Background Of The Related Art

This section is intended to introduce the reader to various aspects of art that may be related to various aspects of the present invention, which are described and/or claimed below. This discussion is believed to be helpful in providing the reader with background information to facilitate a better understanding of the various aspects of the present invention. Accordingly, it should be understood that these statements are to be read in this light, and not as admissions of prior art.

Personal computer systems are made up of many components including processors, storage devices, input/output (I/O) devices, and networking devices. During system operation, a central processing unit (CPU) may load a set of instructions, such as a software program, from a hard disk drive or other secondary storage device, into primary storage, such as random access memory (RAM), where the CPU may begin

executing the program. Word processors, spreadsheets, web browsers, and video games are examples of software which may be executed in this fashion.

I/O devices may provide external data to programs as input or they provide internal data to users as output. For example, word processors may use characters as input, while video games may use movement as input. Once the processor receives input, it performs computations based upon that input and reports the results as output. Thus, I/O devices allow users to interact with programs. Although there are many types of I/O devices, most personal computers have display monitors, keyboards, and pointing devices such as mice. A user can provide input by typing on a keyboard, pointing and clicking with a mouse, or speaking into a microphone for instance, and obtain output by viewing the display monitor or a printout.

Standard keyboards contain an array of keys which are accessible by finger and thumb movements, without moving the hands from a central location. Generally, when a key is pressed, the keyboard sends a specific electrical signal, representing the corresponding character, to the processor. The processor receives and translates this signal so that a program may use it as input. In addition to the character keys, standard keyboards contain function keys, typically labeled "F1" through "F12." The function keys differ from the character keys in that they are usually not associated with specific characters or symbols. Typically, programs assign special functionality to these keys so that the programs perform specific tasks when the function keys are pressed. For

example, a program may launch a help window when “F1” is pressed, or exit an application program when “F10” is pressed. Function keys may also be used by one application program to launch another application.

I/O devices often work together. For example, a pointing device, such as a mouse, controls a screen display pointer. The pointer moves across a display monitor according to corresponding movements of the mouse enabling a user to select executable programs or place a cursor in a desired location. A mouse typically has buttons which send signals to the processor when the buttons are clicked.

Icons may also appear on the display monitor and represent executable programs that launch when activated by the user. The icons are accessible by a keyboard or mouse. For instance, an icon may be associated with a particular word processing program. To launch the program, the user may place the pointer upon the icon and click the mouse.

Icons may also be used to represent uniform resource locators (URLs). URLs serve as links between interconnected computers, and when activated, they allow one computer to access another. Once computers are connected to a common network such as the Internet, they may exchange data, programs, or other stored information. For example, a user connected to the Internet may click on a URL to access a remote “website.”

Applications and URLs may be easily activated, by combining the functionality of various I/O devices. Current systems offer user configurable keyboard function keys for launching specified applications. A user can launch an application program by pressing a function key instead of selecting it from a menu bar or clicking on an icon. These systems configure function keys by linking a particular application to a specified function key. Because the system only works for a predetermined set of applications, an application not in this predetermined set must be launched in the conventional manner. Once the system is configured, templates may be placed over the function keys to remind users of the configuration. Each time the user adds new applications or reconfigures the system, a new template must be produced to reflect the changes. Present systems cannot activate URLs via the function keys. What is needed is a method and apparatus that allows users to launch applications and URLs using user-configurable icons, which may be displayed on a keyboard.

SUMMARY OF THE INVENTION

Certain aspects commensurate in scope with the originally claimed invention are set forth below. It should be understood that these aspects are presented merely to provide the reader with a brief summary of certain forms the invention might take and that these aspects are not intended to limit the scope of the invention. Indeed, the invention may encompass a variety of aspects that may not be set forth below.

In accordance with one aspect of the present invention, there is provided a user-configurable keyboard including a display, configurable to display a plurality of icons,

and a plurality of keys corresponding to the plurality of icons and configurable to launch a software application or a Uniform Resource Locator corresponding to a respective icon.

In accordance with another aspect of the present invention, there is provided a computer system including a console comprising a central processing unit configurable to execute software routines, a monitor electrically coupled to the console and configurable to display icons corresponding to software applications or universal resource locators, and a keyboard electrically coupled to the monitor or the console. The keyboard includes a display configurable to display a plurality of icons, and a plurality of keys corresponding to the plurality of icons and configurable to launch a software application or a Uniform Resource Locator corresponding to a respective icon.

In accordance with still another aspect of the present invention, there is provided a method of configuring a keyboard comprising the steps of: selecting an icon from a system monitor, the icon corresponding to a software application or a universal resource locator; transmitting the icon from the monitor to a keyboard; and displaying the icon on the keyboard.

In accordance with yet another aspect of the present invention, there is provided a method of launching a software application or a universal resource locator comprising the steps of: selecting an icon from a system monitor, the icon corresponding to a software application or a universal resource locator; transmitting the icon from the monitor to a

keyboard; displaying the icon on the keyboard; and depressing a key on the keyboard corresponding to the icon.

BRIEF DESCRIPTION OF THE DRAWINGS

The foregoing and other advantages of the invention will become apparent upon reading the following detailed description and upon reference to the drawings in which:

Figure 1 illustrates an exemplary computer system;

Figure 2 illustrates a more detailed embodiment of the computer system illustrated in Figure 1;

Figure 3 illustrates a keyboard configured in accordance with one embodiment of the present invention;

Figure 4 illustrates one embodiment of launch keys in accordance with the present invention;

Figure 5 illustrates an exemplary system display in accordance with the present invention; and

Figure 6 illustrates a block diagram of the process flow in accordance with the present technique.

DETAILED DESCRIPTION OF SPECIFIC EMBODIMENTS

One or more specific embodiments of the present invention will be described below. In an effort to provide a concise description of these embodiments, not all features of an actual implementation are described in the specification. It should be appreciated that in the development of any such actual implementation, as in any engineering or design project, numerous implementation-specific decisions must be made to achieve the developers' specific goals, such as compliance with system-related and business-related constraints, which may vary from one implementation to another. Moreover, it should be appreciated that such a development effort might be complex and time consuming, but would nevertheless be a routine undertaking of design, fabrication, and manufacture for those of ordinary skill having the benefit of this disclosure.

Turning now to the drawings, and referring first to Figure 1, an exemplary computer system 10 is illustrated in the form of a personal computer or workstation. The computer system 10 includes a console 12 which may house processing chips, memory cards, communication devices, interface elements, and other circuitry as described more fully below. The console 12 is coupled to a monitor 14 for displaying graphical information to a system user. A keyboard 16 is also coupled to the console 12 for inputting data and for selecting desired functions, including rapid access to a network. Additional input devices, such as a mouse 18, may be coupled to the console 12 to provide additional input

capabilities. The components of the computer system 10 are interconnected by data cables 20 a-d which may be standard serial or parallel data transmission assemblies. In one embodiment, the data cable 20b, which is coupled between the console 12 and the keyboard 16, may be a Uniform Serial Bus (USB) cable. Alternatively, one or more of the components of the computer system 10 may be configured to transmit and receive data by means of infrared transceivers or various alternative data transmission techniques.

The computer system 10 is adapted for connection to a network, such as the Internet or an intranet, designated generally by reference number 22. In particular, the console 12 is coupled to a remote communications line 24, such as a conventional telephone cable. Upon execution of network access routines as described below, the computer system 10 is placed in communication with remote computer terminals or servers 26 comprising the network 22. While reference is made in the present description to communication with a network, particularly with the Internet via conventional telephone cables, it should be noted that various alternative configurations may be employed to exchange data between the computer system 10 and the network 22. Such alternative configurations may include digital subscriber lines, wireless communication media, and so forth.

Functional circuitry components comprising the computer system 10 are illustrated in greater detail in Figure 2. For the sake of clarity, elements similar to the elements previously described will be designated by like reference numerals. As shown in Figure 2, the console 12 of the computer system 10 includes a CPU 28 configured to execute pre-established software routines stored in a memory circuit 30. The CPU 28

may be based on any suitable commercially available platform, such as the Pentium II processor available from Intel. Similarly, the memory circuit 30 may include various types and configurations of memory devices, such as random access memory (RAM), read only memory (ROM), dynamic random access memory (DRAM), and disk storage, including resident and removable disk drives. As represented diagrammatically in Figure 2, the memory circuit 30 includes a plurality of storage locations containing code for executing specific tasks. In particular, the memory circuit 30 advantageously stores a network or Internet access routine 32, a network site address configuration 34, a log-on configuration 36, electronic messaging routine and configuration 38, a keyboard configuration or map 40, and other application software routines 42. All of the routines stored in the memory circuit 30 are accessible by the CPU 28, and certain of these may include executable code for launching the application software.

The CPU 28 is also coupled to a series of driver and interface circuits for exchanging data with the peripheral devices included in the computer system 10. Specifically, in the illustrated embodiment, the CPU 28 is coupled to a modem driver 44 which commands operation of a modem 46. The modem 46 permits the CPU 28 to be coupled to the network 22, as described below. The CPU 28 is also coupled to a display driver 48 which transmits data to be displayed on the monitor 14 via a conventional communications port 50. A mouse driver 52 is coupled to the CPU 28 and permits input signals to be transmitted to the CPU 28 from the mouse 18 via a serial port 54. Such input signals originate in switches or sensors 56 provided in the mouse 18. While inputs from such sensors 56 may be processed in a conventional manner by the CPU 28, the

mouse 18 may be configured to produce input signals for commanding the CPU 28 to execute specific software application code, including code which places the computer system 10 in communication with the network 22.

The CPU 28 is further operably coupled to a keyboard interface controller 58. The controller 58 commands operations of the keyboard 16 and coordinates communication of input signals from the keyboard 16 to the CPU 28, as described below. A translator 60 is provided for translating input signals in the form of scan code received from the keyboard 16, and for generating software interrupts as required by the scan code. The keyboard interface controller 58 and the translator 60 are coupled to the keyboard 16 through a communication port 62. The keyboard 16 includes an array of keys, as shown generally at reference numeral 64, for producing the input signals processed by the keyboard interface controller 58 and the translator 60. Upon actuation of the keys 64, unique scan code signals corresponding to the respective keys are produced by an encoding circuit 66. This scan code is then transmitted to the controller 58 and the translator 60 for processing prior to further transmission to the CPU 28. Advantageously, the keyboard 16 may be a Universal Serial Bus (USB) keyboard to permit rapid, generic, bi-directional communication between a user and the computer system 10.

In the embodiment illustrated in Figure 2, certain of the functional circuitry may be defined by hardware, firmware, or software. For example, the drivers 44, 48, and 52

may be defined by appropriate code stored in the memory circuit 30. Similarly, the translator 60 may be defined by software code stored in the memory circuit 30. The encoding circuit 66 is preferably defined by firmware provided within the keyboard 16. As will be appreciated by those skilled in the art, however, the particular configuration and types of circuits performing the functions for placing the computer system in communication within a remote network, such as the Internet, may be accomplished in various manners. Accordingly, the encoding circuit 66 may be provided in the console 12 where desired.

Computer systems, such as the computer system 10, are often used to access software applications, such as Microsoft Word or Excel, or to access various websites and URLs through the Internet. Typically, an operator will use a mouse to position a pointer on a monitor. The pointer is positioned over an application icon or an icon designated to launch an Internet service provider such as Explorer or Netscape. By double-clicking the mouse while the pointer is positioned over an icon, the application corresponding, the application is launched. Alternatively, function keys on the keyboard may be configured to launch certain specific applications, as further discussed below.

Figure 3 illustrates an exemplary keyboard 16 in accordance with the present technique. Function keys 70 are provided for executing predetermined functions based upon particular software applications being run on a computer system. In addition to function keys 70, the keyboard 16 includes a display screen, such as a Liquid Crystal

Display (LCD) 72, for displaying user configurable icons 74 proximate to a set of launch keys 76. While the exemplary display screen comprises LCD 72, it should be understood that the display screen may comprise any commercially available display medium. As summarized in greater detail below, the launch keys 76 may be user configurable allowing the user to program desired application program invocation or universal resource locator (URL) in the computer system memory circuitry. In an alternate embodiment, the display screen may comprise a touch screen such that the launch keys 76 are included on the surface of the display screen, here the LCD 72. Applications may then be launched by touching the LCD 72 at a location correlative to a desired icon 74. In another alternate embodiment, the function keys 70 may correspond to the icons 74 and may be used to launch a corresponding application or URL.

As illustrated in Figure 4, in the present embodiment, launch keys 76 are pressed by the user to force contact of a membrane switch. The primary components of such a switch are illustrated in Figure 4. Accordingly, the membrane switch 78 is formed below an upper panel 80 of the keyboard 16 (shown in Figure 3). An aperture 82 is formed at each location in the keyboard 16 corresponding to the location of the launch key 76. Along a lower region, each key includes a protrusion 84 which extends through a resilient panel 86. The panel 86 forms a biasing region 88 below each launch key 76 to bias the key into an upward position. A membrane 90 is positioned below the resilient panel 86, and carries a plurality of contacts 92. Each contact 92 is coupled to a conductor in a conductor grid for transmitting signals to an encoding circuit 66 (shown in Figure 2). A lower contact 94 is positioned in mutually facing relation to contact 92. Contact 94 may

rest on a base plate 96. Like contact 92, contact 94 is coupled to a conductor (not shown) on a grid for transmitting signals to an encoding circuit upon closure of the switch. An insulated separator 98 is positioned between the membrane 90 and the plate 96. Upon depression of the key 76, the protrusion 84 forces contact 92 downwardly toward contact 94, thereby completing a conductive path through the switch. Alternatively, switches may be foreseen in the keyboard for executing the rapid launch functions described below. Such switches may include, for example, capacitive switches. Moreover, touch screen techniques may also be used to send signals from the keyboard LCD 72, allowing the user to touch the LCD 72 directly, instead of pressing the launch keys 76 or function keys 70.

Software stored in the computer system memory circuit may allow the user to configure the function keys to launch specific applications or navigate to specific Internet sites. An exemplary system display is illustrated in Figure 5. Specifically, the computer system 10 is illustrated, including the console 12 the monitor 14, the keyboard 16, and the mouse 18. The configuration software may produce a keyboard configuration window 200 which displays a graphical representation of keyboard launch keys 202a-l and the LCD window 204 which displays icons 206 corresponding to selected applications and URLs, allowing user interaction with a pointing device, such as a mouse. The elements displayed in the keyboard configuration window 200 correlate with certain elements (LCD 72, icons 74 and launch keys 76) on the keyboard 16. By dragging and dropping icons with a mouse 18, users may configure the keyboard launch keys 76. A user may set a keyboard launch key to launch a specified application by dragging an application icon

208, corresponding to a software application such as Microsoft Word, to a function key on the keyboard configuration window 200. Alternatively, a user can select a web-based icon 210, corresponding to a particular URL, from a website. Once the icon is placed with a designated graphical launch key 202a-1, the icon then appears on a keyboard LCD 72 positioned above a corresponding keyboard launch key 76a-1. The user may then launch the designated application by pressing the particular keyboard launch key, instead of choosing it from an on-screen menu bar. Also, the function keys 70 may similarly be configured to launch applications displayed on the LCD 72. Alternatively, if the keyboard display is a touch-screen display, applications may be configured for rapid invocation in a similar drag and drop manner, and they may be launched by touching the keyboard display where the application icon appears. Advantageously, the keyboard 16 now displays icons on the user-configurable LCD window 210. A user is able to select a corresponding function key to launch a particular application without using a mouse or a monitor. Further, a user does not need to remember the applications associated with each function key since the application icons are displayed on the keyboard 16.

In the example illustrated in Figure 5, web-based icon A has been dragged from a web-site and dropped into the keyboard configuration windows 200 at the position corresponding to the first launch key 76a. Similarly, other icons have been dragged and positioned corresponding to the remaining launch keys 76b-1. As illustrated, the icons appearing in the keyboard configuration window 200 are transmitted to their corresponding location on the keyboard LCD 72.

The process flow corresponding to the embodiment discussed with reference to Figure 5 is illustrated in Figure 6. First, an icon corresponding to an application or URL is selected from a web browser or operating system using a mouse, as in block 300. Next, the mouse 18 is used to drag the icon to a configuration window 200 on the monitor 14, which correlates with the configuration of the launch keys 76a-1 on the keyboard 16, as in block 302. The icon is then released in a location in the keyboard configuration window 200 such as corresponding to location 202a correlating with a specific launch key (such as launch key 76a), as in block 304. The icon is then transmitted to the keyboard 14 and displayed on an LCD display 72 corresponding to the specific launch key 76a, as in block 306. The process may be repeated to configure other launch keys 76b-1, as in block 308. Once the icon is displayed on the LCD display 72 on the keyboard 14, the application or URL can be launched by depressing the corresponding launch key 76a-1, as in block 310.

While the invention may be susceptible to various modifications and alternative forms, specific embodiments have been shown by way of example in the drawings and have been described in detail herein. However, it should be understood that the invention is not intended to be limited to the particular forms disclosed. Rather, the invention is to cover all modifications, equivalents, and alternatives falling within the spirit and scope of the invention as defined by the following appended claims. For example, while in the foregoing description reference has been made to a general purpose keyboard having

1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035 2036 2037 2038 2039 2040 2041 2042 2043 2044 2045 2046 2047 2048 2049 2050 2051 2052 2053 2054 2055 2056 2057 2058 2059 2060 2061 2062 2063 2064 2065 2066 2067 2068 2069 2070 2071 2072 2073 2074 2075 2076 2077 2078 2079 2080 2081 2082 2083 2084 2085 2086 2087 2088 2089 2090 2091 2092 2093 2094 2095 2096 2097 2098 2099 2100 2101 2102 2103 2104 2105 2106 2107 2108 2109 2110 2111 2112 2113 2114 2115 2116 2117 2118 2119 2120 2121 2122 2123 2124 2125 2126 2127 2128 2129 2130 2131 2132 2133 2134 2135 2136 2137 2138 2139 2140 2141 2142 2143 2144 2145 2146 2147 2148 2149 2150 2151 2152 2153 2154 2155 2156 2157 2158 2159 2160 2161 2162 2163 2164 2165 2166 2167 2168 2169 2170 2171 2172 2173 2174 2175 2176 2177 2178 2179 2180 2181 2182 2183 2184 2185 2186 2187 2188 2189 2190 2191 2192 2193 2194 2195 2196 2197 2198 2199 2200 2201 2202 2203 2204 2205 2206 2207 2208 2209 2210 2211 2212 2213 2214 2215 2216 2217 2218 2219 2220 2221 2222 2223 2224 2225 2226 2227 2228 2229 2230 2231 2232 2233 2234 2235 2236 2237 2238 2239 2240 2241 2242 2243 2244 2245 2246 2247 2248 2249 2250 2251 2252 2253 2254 2255 2256 2257 2258 2259 2260 2261 2262 2263 2264 2265 2266 2267 2268 2269 2270 2271 2272 2273 2274 2275 2276 2277 2278 2279 2280 2281 2282 2283 2284 2285 2286 2287 2288 2289 2290 2291 2292 2293 2294 2295 2296 2297 2298 2299 2300 2301 2302 2303 2304 2305 2306 2307 2308 2309 2310 2311 2312 2313 2314 2315 2316 2317 2318 2319 2320 2321 2322 2323 2324 2325 2326 2327 2328 2329 2330 2331 2332 2333 2334 2335 2336 2337 2338 2339 2340 2341 2342 2343 2344 2345 2346 2347 2348 2349 2350 2351 2352 2353 2354 2355 2356 2357 2358 2359 2360 2361 2362 2363 2364 2365 2366 2367 2368 2369 2370 2371 2372 2373 2374 2375 2376 2377 2378 2379 2380 2381 2382 2383 2384 2385 2386 2387 2388 2389 2390 2391 2392 2393 2394 2395 2396 2397 2398 2399 2400 2401 2402 2403 2404 2405 2406 2407 2408 2409 2410 2411 2412 2413 2414 2415 2416 2417 2418 2419 2420 2421 2422 2423 2424 2425 2426 2427 2428 2429 2430 2431 2432 2433 2434 2435 2436 2437 2438 2439 2440 2441 2442 2443 2444 2445 2446 2447 2448 2449 2450 2451 2452 2453 2454 2455 2456 2457 2458 2459 2460 2461 2462 2463 2464 2465 2466 2467 2468 2469 2470 2471 2472 2473 2474 2475 2476 2477 2478 2479 2480 2481 2482 2483 2484 2485 2486 2487 2488 2489 2490 2491 2492 2493 2494 2495 2496 2497 2498 2499 2500 2501 2502 2503 2504 2505 2506 2507 2508 2509 2510 2511 2512 2513 2514 2515 2516 2517 2518 2519 2520 2521 2522 2523 2524 2525 2526 2527 2528 2529 2530 2531 2532 2533 2534 2535 2536 2537 2538 2539 2540 2541 2542 2543 2544 2545 2546 2547 2548 2549 2550 2551 2552 2553 2554 2555 2556 2557 2558 2559 2560 2561 2562 2563 2564 2565 2566 2567 2568 2569 2570 2571 2572 2573 2574 2575 2576 2577 2578 2579 2580 2581 2582 2583 2584 2585 2586 2587 2588 2589 2590 2591 2592 2593 2594 2595 2596 2597 2598 2599 2600 2601 2602 2603 2604 2605 2606 2607 2608 2609 2610 2611 2612 2613 2614 2615 2616 2617 2618 2619 2620 2621 2622 2623 2624 2625 2626 2627 2628 2629 2630 2631 2632 2633 2634 2635 2636 2637 2638 2639 2640 2641 2642 2643 2644 2645 2646 2647 2648 2649 2650 2651 2652 2653 2654 2655 2656 2657 2658 2659 2660 2661 2662 2663 2664 2665 2666 2667 2668 2669 2670 2671 2672 2673 2674 2675 2676 2677 2678 2679 2680 2681 2682 2683 2684 2685 2686 2687 2688 2689 2690 2691 2692 2693 2694 2695 2696 2697 2698 2699 2700 2701 2702 2703 2704 2705 2706 2707 2708 2709 2710 2711 2712 2713 2714 2715 2716 2717 2718 2719 2720 2721 2722 2723 2724 2725 2726 2727 2728 2729 2730 2731 2732 2733 2734 2735 2736 2737 2738 2739 2740 2741 2742 2743 2744 2745 2746 2747 2748 2749 2750 2751 2752 2753 2754 2755 2756 2757 2758 2759 2760 2761 2762 2763 2764 2765 2766 2767 2768 2769 2770 2771 2772 2773 2774 2775 2776 2777 2778 2779 2780 2781 2782 2783 2784 2785 2786 2787 2788 2789 2790 2791 2792 2793 2794 2795 2796 2797 2798 2799 2800 2801 2802 2803 2804 2805 2806 2807 2